

ARTERIOVENOUS ANASTOMOSIS.

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ON July 19, 1906, a man forty years of age, while working in a pipe foundry, had both legs crushed by two 10-inch core bars, weighing about 900 pounds, falling on him; there was a simple fracture of the left leg, and a compound fracture of the right ankle. When examined under ether, the bones of the ankle and lower end of the leg resembled ice when broken in a towel; the anterior tibial artery was found to be severed and the tissues around the joint were so badly lacerated that it was questionable whether the posterior was intact or not. There was considerable shock, and it would have been almost impossible to detect any pulsation in either of the vessels. The long saphenous vein was cut also, and I decided to unite the proximal end of the anterior tibial artery with the distal portion of the vein. Blood was flowing from both vessels and I secured them temporarily with lightly tied silk ligatures until I could finish resecting the ankle.

When ready to unite the vessels I resected the artery above and the vein below the ligature, in order to get rid of the bruised part of the vessels. Two small silk sutures were passed through the whole thickness of the artery on opposite sides and then down into the lumen of the vein for about a quarter of an inch, and then out through the wall of the vein, and, when drawn tight and tied, invaginated the artery into the vein. The end of the vein was sutured to the artery by a continuous silk suture.

No clamps were needed to control the circulation, on account of the weak condition of the heart's action. The blood was still flowing from both vessels when the artery was invaginated, but no distinct pulsation could be detected. There was no leakage after the circular suture was introduced. The wound was packed with gauze and the sutured vessel covered with a flap of flesh which could be raised up for inspection of the vessel.

The foot was put under a constant drip of carbolic acid solution $\frac{1}{2}$ per cent., and kept warm with a hot-water bag.

The following day the foot was warm and normal in appearance; the circulation seemed as good as in the other foot. Motion and sensation normal. About half an inch of the vessel could be seen a short distance above the suture line, and slight pulsations could be felt; it seemed to be fully distended.

The artery was intact the eleventh day after the operation and bled some from the outer coats when sponged. No distinct pulsations could be felt, but it seemed to be in a healthy condition, and was thought to be carrying a small current of blood. The walls of the artery were firm and tense, and a clot was in all probability forming, which in the course of the next few days completely filled the lumen of the vessel and caused it to slough, owing to its exposed condition.

I did not attempt to examine it again for several days, and, when I did so, I found only a sloughing cord, which I recognized as the vessels, but its condition was such that it was worthless as a specimen.

I think the vein probably supplied blood to the foot for two weeks until a new collateral circulation was established which grew stronger as the fibrin was thrown down in the vessel, constantly narrowing its lumen.

About four months later the bone showed a somewhat diseased condition, and the patient insisted upon having the foot amputated. Unfortunately this was done while I was in Europe, and nothing was found out as to how the circulation of the foot was carried on.